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ABSTRACT

A course designed to acquaint teachers and teacher trainees with the nature of the creative process and its development in school environments is described. Students in the instruction sections first examined existing instructional procedures and environmental conditions that constitute a barrier to the development of creativity. Students attempted to find alternatives to existing situations in order to create instructional settings that would be conducive to improvement of creative problem-solving skills. Finally, participants constructed operational plans for the development of creativity in classrooms. Activities included "brain-storming" exercises, performing "unusal uses" tasks, responding to "what would happen if" questions, presentations based on reading and research, and participation in creative problem-solving tasks. Results of final opinionnaire scores on the part of participating students indicated that the creativity course has the capacity to produce definite attitude changes in favor of teaching styles that develop creativity. (JD)

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THE MEASUREMENT OF ATTITUDE CHANGE IN CREATIVE PROBLEM-SOLVING PROGRAMS

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One of the intriguing concerns which continually piques the curiosity of educational practitioners has centered around the extent of attitude change attributable to student participation in creative problem-solving workshops and classes. Such programs are typically well received and often viewed as successes by both students and instructors.

However, the true value of such programs should focus on actual attitude changes of participants who ultimately will be charged with the responsibility of transmitting creative problem-solving attitudes and skills to their students. Earlier research done by one of the authors revealed that public school teachers who were involved in intensive creativity inservice projects of a year's duration were able to cause substantial gains to occur in their students' creativity test scores as measured by the Minnesota Tests of Creativity.[1] However, the authors were interested in the attitude changes which could occur in a thirty contact-hour class in creativity.

Entitled Creativity in the Classroom, the course was designed to acquaint teachers and teacher trainees with the nature of the creative process and its development in school environments. There were three basic thrusts which permeated the various instructional sessions. First, an examination was made of existing instructional procedures and general environmental conditions which constituted a barrier to the development of creativity. Secondly, students attempted to find alternatives to existing situations in order to create instructional settings which would

be conducive to the improvement of creative problem-solving skills. Finally, participants constructed operational plans for the development of creativity in classrooms. Based on the authors' conceptual planning model,[2] the plans included two sections. The first deals with the long-range planning process. Students stated long-range purposes of instruction and identified specific concepts to be learned. Performance objectives were then stated which assessed the extent to which the concepts were achieved.

The crux of the long-range portion is the utilization of the "Fourteen Basic Elements of Creative Behavior."[3] Students stressed at least two of the elements in their plans, thus combining the more traditional intellectual goals with creative behavior development. The authors feel that it is highly crucial not to separate these two strands in the educational process. The development of creative problem-solving skills should be accomplished through the use of appropriate instructional techniques.

The second portion included daily plans which dealt with the instructional strategies to be used in providing activities which assisted in attaining the stated objectives and developing the elements of creative behavior as listed in the long-range plans.

Students in creativity classes became involved in a variety of activities which were designed to develop a functional understanding of creativity and the kinds of instructional strategies required to facilitate its development. Some of the activities involved small group interaction to such films as Why Man Creates and Future Shock. Students also read and discussed papers written by such well-known figures as J.P. Guilford, Carl Rogers, Harold Anderson,

Abraham Maslow, Paul Torrance, and others. Since research strongly suggests a high correlation between creativity and humor development, several sessions were devoted to activities which aided in the proficiency of humor production and consumption. Some examples of these activities were punning exercises, writing humorous stories which were developed in several ways, writing "plot titles," etc. Other classroom activities included "brain-storming" exercises, performing "unusual uses" tasks, responding to "What would happen if" questions, student presentations based on their research, presentations by instructors, and participation in other creative problem-solving tasks.

The student subjects were participants in the teacher preparation program at Eastern Washington State College. The institution has an enrollment of 7,000 students, more than 35% of whom are involved in teacher education. The class, Creativity in the Classroom, can be used to satisfy one of the optional requirements for elementary and secondary teaching candidates, and also by professional practitioners seeking to complete a "fifty year" requirement.

Conversations with Paul Torrance led to the idea of using his instrument, entitled Opinions on Creative Teaching and Learning for a measurement device. It was felt that this attitude survey had the capacity to provide the investigators with the pre-post measure of attitude changes in which they were interested. The instrument consists of 60 statements pertaining to a variety of conditions relating to creativity. Scoring is based on the Likert Scale Technique with five possible responses ranging from "strongly disagree" to "strongly agree."

These responses were converted to a five point numerical scale. Items that had "strongly agree" to a positive statement concerning creative behavior were given a "five" and a "strongly disagree" response, to the same statement, was scored as a "one." The reverse procedure was utilized for statements

with negative connotations. Each instrument was given a total raw score based on the sum total of responses to the statements. Therefore, higher scores indicated a positive attitude toward the development of creative problem-solving skills. Students responded to the opinionnaires prior to any actual instructional activities and the post-test was administered during the final class meeting.

In order to compare the experimental group of students involved in the creativity class, a second group of students in teacher preparation was identified. This control group consisted of students taking an introduction to education course which was not basically concerned with creativity. The purpose of the class taken by the control group was to introduce them to a six-role model of teaching.[4] A large group session was conducted weekly which would focus on a single role. Seminar sessions in small groups were then held so students could deal with a variety of topics pertaining to that particular role. In addition, control group subjects were required to participate in a school-related practicum experience. This provided the opportunity for students to become directly involved in a laboratory setting in which they could relate the roles they were examining. None of the roles dealt primarily with the topic of creativity. The students in the control group were administered the Torrance opinionnaire at the beginning and termination of the course and pre-post measures were computed in the same manner as for the experimental group.

Statistical analysis was based on the use of the Sign Test described by Best.[5] This procedure calls for a comparison of the number of post-test scores which are greater or smaller than the pre-test scores. A z-test score is then computed in order to determine whether the number of gains is of sufficient quantity to be statistically significant. The null hypothesis is assumed in the statistical analysis.

Results of the data revealed that 98 of the experimental subjects improved their pre-post test scores on the instrument while 39 of the scores decreased and five remained the same. This number of increases was found to be statistically significant at less than .01. Hence, the null hypothesis was rejected. In the control group sample, 40 of the subjects raised their scores while 35 decreased and four remained the same. The number of increases was not statistically significant at the .05 level and the null hypothesis was substantiated.

Summary

Results of the experimental subjects' opinionnaire scores seems to indicate that the creativity course has the capacity to produce definite attitude changes in favor of teaching styles which develop creativity. While the results are not surprising, they strongly suggest that certain instructional strategies are useful for creating such attitude changes. The authors suspect that there may have been other reasons for the dramatic differences in these changes.

First, the classes were small to medium in size as far as the number of participants. The smallest group of pre-post students was ten and the largest was 35. Secondly, this small number of participants made it possible for the investigators to design instructional sequences which relied upon an optimum amount of group interaction. Students conducted most of their follow-up activities in small groups of three or four. In this type of environment, the students were able to scrutinize and re-develop basic beliefs regarding creativity and the creative-problem-solving process. It is the authors' belief that groups of such size have the potential for generating

a maximum amount of productivity in creative problem-solving activities. Topics concerned with creativity were employed quite extensively throughout the thirty contact-hour course as a result of interaction sessions and presentations.

On the other hand, control group subjects were not dealing directly with creativity. Students were involved in learning about teacher roles, although conversations with the instructors revealed that the subject of creativity was discussed in most of the control group classes at least casually. The control group test-retest results were not statistically significant.

The investigators have concluded that the course described does have the capability of changing the opinions of beginning and experienced teachers. The experimental subjects improved their attitudes pertaining to the importance of helping individuals become more creatively productive. However, a word of caution should be inserted at this point. While the rather dramatic experimental group change was encouraging, it is impossible to determine the true long-range effects in teacher attitude without further studies of a longitudinal nature.

1. Mitchell, Bruce. "The Classroom Pursuit of Creativity: One Strategy that Worked," Journal of Research and Development in Education, Paul Torrance, ed: Vol. 4, #3. Spring, 1971. pp. 57-61.

2. Mitchell, Bruce; Stueckle, Arnold; and Wilkens, Robert. Conceptual Planning for Creative Learning. (Dubuque, Iowa: Kendall Hunt Publishing Comapny, 1976).

3. Ibid, p. 18.

4. National Iota Council. Research in Education. (Englewood Cliffs, New Jersey: Prentice Hall Publishing Company, 1970).

5. Best, John. Research in Education. (Englewood Cliffs, New Jersey: Prentice Hall Publishing Comapny, 1970), pp. 282-83.